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Hepato-, Nephro- and Pancreatoprotective Effect of Derivatives of Drug Xymedon with Biogenic Acids Under Toxic Influence of Carbon Tetrachloride in Rats

Alexandra Borisovna Vyshtakalyuk[1] · Andrey Anatolyevich Parfenov[1,2] · Nail Gosmanovich Nazarov[1,3] · Lilya Faikovna Gumarova[1] · Georgii Valentinovich Cherepnev[4] · Irina Vladimirovna Galyametdinova[1] · Vladimir Vasilyevitch Zobov[1,5] · Vyacheslav Engelsovich Semenov[1,2]

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Abstract

The main purpose of the work is to study pharmacological peculiar properties of effect of pyrimidine derivatives, salt-like conjugates of the pyrimidine-based drug Xymedon (**I**) with biogenic acids (succinic (**II**), L-ascorbic (**III**), *para*-aminobenzoic (**IV**), niacin (**V**), and L-methionine (**VI**)) as well as a compound (**VII**), in which the atom *N* of the pyrimidine ring is alkylated by the methyl group, on the liver, kidney, and pancreas in rats under toxic influence of carbon tetrachloride. The experiment has been carried out on 115 mature outbred white rats of both sexes at the prophylactic scheme. The compounds were studied in doses 1/300 of LD_{50}. The research has studied the structural-morphological changes in the liver, kidneys, and pancreas, as well as biochemical markers: cytolysis (lactate dehydrogenase, alanine aminotransferase, aspartate aminotransferase), liver (total, direct, and indirect bilirubin, γ-glutamyl transpeptidase) kidney (urea, creatinine), and pancreas (amylase, lipase) functions. The study has shown that noncovalent conjugates of Xymedon with biogenic acids had a protective effect on the liver as well as on the kidneys and pancreas poisoned by carbon tetrachloride. The derivative with L-ascorbic acid, which had the most pronounced effect on structural-morphological changes in liver among other pyrimidine derivatives, has also proved to be effective in terms of the impact on the kidney and pancreatic cells. The derivative with *p*-aminobenzoic acid, along with improving the structural-morphological organization of kidneys, also results in reduced levels of creatinine and bilirubin in the blood.

Keywords Pyrimidine derivatives · Carbon tetrachloride · Toxic damage · Liver · Kidneys · Pancreas

✉ Alexandra Borisovna Vyshtakalyuk
alex.vysh@mail.ru

Andrey Anatolyevich Parfenov
aimt66@gmail.com

Nail Gosmanovich Nazarov
nail-naz@yandex.ru

Lilya Faikovna Gumarova
multiklilya@mail.ru

Georgii Valentinovich Cherepnev
rkb2_rt@mail.ru

Irina Vladimirovna Galyametdinova
iragal2009@yahoo.com

Vladimir Vasilyevitch Zobov
zobov@iopc.ru

Vyacheslav Engelsovich Semenov
sve@iopc.ru

[1] Laboratory of Chemical-Biological Research, Laboratory of Nucleotide Base Chemistry of Arbuzov Institute of Organic and Physical Chemistry, FRC Kazan Scientific Center of RAS, 8 Arbuzova str., Kazan 420088, Republic of Tatarstan, Russia

[2] Kazan National Research Technological University, Kazan, Russia

[3] Institute of Management Economics and Finance, Kazan Federal University, Kazan, Russia

[4] University Kazan Clinic, Kazan, Russia

[5] Institute of Environmental Sciences, Kazan Federal University, Kazan, Russia